

EFFECT OF SPEED AND ENDURANCE TRAINING ON CARDIO-RESPIRATORY ENDURANCE

Dr. Mohan Lal

PET, Department of Physical Education, Gov. of Rajasthan

ABSTRACT- *The purpose of the present study was to find the effect of Speed and endurance trainings on cardio-respiratory endurance. For this purpose, thirty female players from, Jaipur representing in various games and sports in the age group of 18 – 26 years were selected. They were divided into three equal groups, each group consisted of ten players, in which group – I underwent Speed training, group – II underwent endurance training and group – III acted as control group who did not participate in any special training and underwent their normal respective training sessions. The training period for this study was three days in a week for twelve weeks. Prior to and after the training period the subjects were tested for leg Speed and cardio-respiratory endurance. Cardio-respiratory endurance was assessed by administering Cooper’s 12 minutes walk/run test. The result of the study has shown that the Speed training group has significantly improved in cardio-respiratory endurance and endurance training group has significantly improved their cardio-respiratory endurance after twelve weeks of training when compared with the control group.*

Keyword- Speed, endurance, cardio-respiratory.

1. INTRODUCTION

Human beings have constantly tried to jump higher, run faster and exhibit greater endurance, Speed and skill. We are naturally ambitious and competitive of excellence in athletic performance. As a result of practical observation, experience and scientific experimentation, old method of conditioning, though attractive and rich in tradition, have been replaced and discarded by new methods based on approaching and understanding. For centuries, this evaluation towards better methods of conditioning was slow, but in the recent years the affective changes that have taken place have brought about some amazing results in performance. New advances in science make it possible to jump higher and run faster than ever before. Plyometrics is a form of exercise, which links muscles Speed with speed of movement. There are two

phases of muscular contraction during the running or jumping motion. Muscles go through a stretch phase, and then after a contraction phase. Plyometric exercises are designed to shorten the cycle time between the two phases. A rapid cycle time allows max. energy transfer between contraction phases and stretch phase. The new platform shoes have been shown to dramatically improve the efficiency of plyometric exercises. Training in platform shoes is increasingly becoming the method of choice for serious jumpers and sprinter. No other method develops as quickly, the specific muscle groups and neural links essential for running, jumping height and speed. Speed one’s muscles through Speed training offers several benefits and makes it easier to do one’s daily practice. One can find that carrying your briefcase, doing laundry and hauling groceries becomes easier when chest muscles and one’s arm are toned leg Speed is very essential for sports persons, especially athletes. The Speed of a muscle is related to its cross sectional area or girth. Speed training increased the contractile proteins that give the muscle its pulling power. By comparing Speed to act, it is possible to determine if more Speed is needed. If an athlete’s performance improves with increased Speed then Speed training is to be suggested. Cardio-respiratory endurance is the ability work done to one’s maximum aerobic capacity for a prolonged period of time. To increase one’s endurance is depend upon increasing the skill to work at high, relative work load for extended periods of time.

2. MATERIALS AND METHODS

This study under investigation involves the conducting tests of Speed and endurance training on cardio-respiratory endurance. Only thirty female players from various games and sports in Jaipur from and aged between 18 and 26 years were selected as subjects. The selected thirty players were randomly divided into three groups of ten each, out of which group – I (n = 10) underwent Speed training, group – II (n = 10) underwent endurance training and group – III (n = 10) remained as control, which did not participate any special activities. The training programme was carried out for three days per week during morning session only (6 am to 8 am) for twelve weeks. Leg Speed was assessed by using dynamometer and cardio-respiratory endurance was assessed by administering Cooper’s 12 minutes run/walk test. The analysis of covariance (ANCOVA) was used to find out the significant difference if any, between the experimental groups on selected criterion variables separately. In all the cases, 0.05 level of confidence was fixed

to test the significance, which was considered as an appropriate. Since, there were three groups involved, the Scheffé S test was applied as post hoc test.

3. ANALYSIS OF DATA

The data collected prior to and after the experimental periods on leg Speed and cardio-respiratory endurance on Speed training group, endurance training group and control group were analyses and presented in the following table -I. Table - I: Analysis of Covariance and 'F' ratio for Cardiorespiratory endurance for Speed Training Group, Endurance Training Group and Control Groups

Variable Name	Group Name	Speed Training Group	Endurance Training Group	Control Group	'F' Ratio
Cardio respiratory Endurance (Meters)	Pre-test Mean ± S.D	1286.3±25.11	1281.9±30.71	1287.6±29.55	1.596
	Post-test Mean ± S.D.	1289.5±26.86	1301.5±28.26	1288.9±27.46	9.213*
	Adj. Post-test Mean	1288.74	1312.66	1286.198	21.923*

*Significant at .05 level of confidence.

(The table value required for significance at .05 level of confidence with df 2 and 27 were 1.596).

Table - II: Scheffé S Test for the Difference Between the Adjusted Post-Test Mean of Selected Criterion Variables Adjusted Post-test Mean on cardio respiratory endurance

Speed Training Group	Endurance Training Group	Control group	Mean Difference	Sig. at .05 level
1288.74		1286.198	2.515	0.00
1288.74	1312.66		23.96*	0.00
	1312.66	1286.198	26.452*	0.00

*Significant at .05 level of confidence

4. RESULTS:

Table - I showed that there was a significant difference among Speed training group, endurance training group and control group on cardio-respiratory endurance. Table - II also shows that the Scheffé S Test for the difference in cardio-respiratory endurance between adjusted post-test mean of Speed training group and endurance training group (23.96) and endurance training group and control group (26.452), which were significant at .05 level of confidence. And there was no significant difference between Speed training group and control group (2.515) on cardio-respiratory endurance after the training programme.

5. DISCUSSION ON FINDINGS:

Based on the results of the study, the following findings were drawn

There was a significant improvement in cardio-respiratory endurance after the endurance training when compared with Speed training and control groups. But there was no significant improvement in cardio-respiratory endurance after the Speed training. This result is in line with the findings of **Raja** (1992) and **Uppal** (1980) found that there was a significant improvement in cardio-respiratory endurance after the endurance training.

6. REFERENCE:

- [1] C. Boucher and R.M. Malina, "Genetics of Physical Fitness and Motor Performance", *Exercise and Sports Sciences Reviews*, 11, (1993), 3206. Internet Resources, www.Sales@jumpusa.com
- [2] Edward G. Mcfarland, *Getting Strong Through Speed Training*, Internet Resource, www. Google.Com.
- [3] Jack Daniels, Robert Fitts and George Sheehan, *Conditioning for Distance Running*, New York: John Willey and Sons Inc., 1978. www.generalfitness.com
- [4] Philip J. Rasch and Rogher K. Burkey, *Kinesiology and Applied Anatomy*, 6th Ed., Philadelphia: Lea and Febiger Co., 1978.
- [5] K. Spanos, L. Karaiskos, E. Zetou and C. Portokalis, "The Effects of Two Speed Training Programs in Maximum Speed and Muscular Endurance of Male Adults", *Physical Training*, August 2007.
- [6] Hennessy and Watson, "The Interference Effect of Training for Speed and Endurance Simultaneously", *Journal of Speed and Conditioning Research*, 8:1, February 1994.
- [7] Kraemer, W.J., S. A. Mazzetti, B. C. Nindl, L. A. Gotshalk, J. S. Volek, J. A. Bush, J. O. Marx, K. Dohi, A.L. Gómez, M. Miles, S. J. Fleck, R. U. Newton, and K. Häkkinen, "Effect of Speed Training on Women's Speed/Power and Occupational Performances", *Med. Sci. Sports Exerc*, 33:6, 2001.
- [8] Raja, S. Chidambara, "Comparative Analysis of the Effects of Continuous and Interval Running on Cardio-respiratory Endurance", *Unpublished M.Phil, Dissertation*, Rajasthan University, jaipur, 1992.
- [9] Uppal, Arun Kumar, "Effects of Interval Training and Two Continuous Load Methods on Cardio Respiratory and Selected Physiological Parameters", *Unpublished Doctoral Dissertations*, Jiwaji University, Gwalior, 1980.